ABSTRACT

A distributed temperature sensor is deployed in a wellbore and is functionally connected to a processor. The processor receives the data from the distributed temperature sensor and automatically processes the data to highlight valuable information to the user relating to the relevant well, completion, or reservoir. In one embodiment, the distributed temperature sensor and processor are utilized in a well containing a gas-lift system, wherein the processor highlights valuable information to the user pertaining to the gas-lift system. A well model enabled by the processor enables the determination of a produced fluid flow rate in the well having a gas lift system. Temperatures are measured within the well to obtain a temperature profile, and this profile is processed according to the well model. The well model relates thermal characteristics, e.g. thermal decay and/or amplitude of a thermal discontinuity at an injection point, to flow rate. The flow rate determined from the thermal characteristics is used to optimize production from the well.